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| EXAMINER |
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GARRETT, DAWN L

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| ART UNIT | PAPER NUMBER |
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1794

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12/14/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/813,624

Applicant(s)

HAMADA ET AL.

Examiner

Dawn Garrett

Art Unit

1794

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 October 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3 and 19-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 19-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

1. This Office action is responsive to the amendment filed October 15, 2007. Claims 4-18 are canceled. Claims 20-24 have been newly added. Claims 1-3 and 19-24 are pending.

Claim Rejections - 35 USC § 102/103

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-3 and 19 are again rejected under 35 U.S.C. 102(e) as being anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Higashi et al. (US 7,045,950). Higashi et al. discloses organic electroluminescent devices with an organic compound layer having an impurity concentration of lower than 1000 ppm (see abstract). This impurity concentration encompasses the impurity range required by the present claims. The organic compounds may include phenylamino-containing compounds (see bottom of col. 7-8, bottom of col. 13-14, top of col. 15-16, col. 17-22). The electroluminescent devices may further comprise carrier-transporting layers per claim 3 (see col. 26, lines 51). Claim 1 is a product-by-process claim. M.P.E.P. § 2113:

“Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process.” *In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985)...

“The Patent Office bears a lesser burden proof in making out a case of *prima facie* obviousness for product-by-process claims because of their peculiar nature” than when a product is claimed in the conventional fashion. *In re Fessman*, 180 USPQ 324, 326 (CCPA 1974).

Once the Examiner provides a rationale tending to show that the claimed product appears to be the same or similar to that of the prior art, although produced by a different process, the burden shifts to applicant to come forward with evidence establishing an unobvious difference between the claimed product and the prior art product. *In re Marosi*, 218 USPQ 289, 292 (Fed. Cir. 1983).

It is further noted that claim 1 does not require that some of the copper catalyst used in an Ullmann reaction is left behind in the phenylamino product. With regard to claim 19, regardless of a method of detecting impurities in a final product, the final product in the prior art is considered to meet the product limitations of claim 1 as required.

In the alternative that Higashi et al. does not anticipate the organic compound of claim 1, it would be obvious to one of ordinary skill in the art to use a compound in its most pure form as one would expect the most pure form of the compound to perform better than an impure form of the compound. Furthermore, it is obvious to purify a known compound (see MPEP 2144.04).

4. Claims 1-3 and 19 are again rejected under 35 U.S.C. 102(e) as being anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Toguchi et

al. (US 6,565,993). Toguchi et al. discloses electroluminescent devices comprising organic layers including an electron-transporting layer (carrier transporting material), emission layer, and a hole-transporting layer (carrier transporting material) (see abstract and col. 3, lines 48-60). Materials included in the organic functional layers of the device are tris(8-quinolinol)aluminum complex (Alq3), 1,4-bis(N-p-tolyl-N-4-(4-methylstyryl)phenylamino)naphthalene (see par. 4, lines 14-22), and 4,4'-bis (m-tolylphenylamino)biphenyl (TPD) (see col. 5, lines 42-43) per the claim requirements of a compound having a phenylamino group. No impurities are disclosed by Toguchi et al. with regard to the level of no impurities recited in the present claims. Claim 1 is a product-by-process claim. M.P.E.P. § 2113:

“Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process.” *In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985)...

“The Patent Office bears a lesser burden proof in making out a case of *prima facie* obviousness for product-by-process claims because of their peculiar nature” than when a product is claimed in the conventional fashion. *In re Fessman*, 180 USPQ 324, 326 (CCPA 1974).

Once the Examiner provides a rationale tending to show that the claimed product appears to be the same or similar to that of the prior art, although produced by a different process, the burden shifts to applicant to come forward with evidence establishing an unobvious difference between the claimed product and the prior art product. *In re Marosi*, 218 USPQ 289, 292 (Fed. Cir. 1983).

It is further noted that claim 1 does not require that some of the copper catalyst used in an Ullmann reaction is left behind in the phenylamino product. With regard to claim 19, regardless of a method of detecting impurities, the final product in the prior art is considered to meet all product limitations of claim 1 as required.

In the alternative that Toguchi et al. does not anticipate the organic compound of claim 1, it would be obvious to one of ordinary skill in the art to use a compound in its most pure form as one would expect the most pure form of the compound to perform better than an impure form of the compound. Furthermore, it is obvious to purify a known compound (see MPEP 2144.04).

5. New claims 20-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Toguchi et al. (US 6,565,993) in view of Turner et al. (US 4,764,625). Toguchi et al. discloses electroluminescent devices comprising organic layers including an electron-transporting layer (carrier transporting material), emission layer, and a hole-transporting layer (carrier transporting material) (see abstract and col. 3, lines 48-60). Materials included in the organic functional layers of the device are tris(8-quinolinol)aluminum complex (Alq3), 1,4-bis(N-p-tolyl-N-4-(4-methylstyryl)phenylamino)naphthalene (see par. 4, lines 14-22), and phenylamino compound (NPB) (same as used by applicant) (see col. 6, lines 58-65) per the claim requirements of a compound having a phenylamino group. No impurities are expressly disclosed by Toguchi et al. and Toguchi et al. is silent with respect to how the hole transporting phenylamino compounds are synthesized. It would be obvious to one of ordinary skill in the art to use a compound at a purity level that most beneficially affects

the operating performance of the device. Furthermore, it is obvious to purify a known compound (see MPEP 2144.04). The experimental modification of this prior art in order to ascertain optimum operating conditions fails to render applicants' claims patentable. In addition, secondary reference Turner et al. teaches it is well established amino compounds may be formed by an Ullmann synthesis reaction using a copper catalyst (see abstract). Since the method for making a tertiary amine using an Ullmann reaction is well known in the art, it would have been obvious to have selected a tertiary amine synthesized by an Ullmann reaction in the Toguchi et al. device, because one would expect the predictable result of a tertiary amine suitable for an organic electroluminescent device. Compounds formed by the Ullmann process would be expected to have a similar level of copper impurities as recited in the claims, because applicant does not recite any process of achieving the claimed levels of purity other than to synthesis the compounds using an Ullmann reaction.

With regard to claim 24, regardless of a method of detecting impurities, the final product in the prior art is considered to meet all product limitations of claim 1 as required. The apparatus and method for detecting impurities do not effect the composition of the device product. In addition, ICP is a well known method of elemental analysis.

Response to Arguments

6. Applicant's arguments filed October 15, 2007 have been fully considered but they are not persuasive.

Applicant argues Higashi et al. does not measure the copper powder remaining in the reaction product. The examiner submits claims 1-3 and 19 do not require any copper be present. Applicant has not established that the Higashi process would produce a product outside of the claimed purity range. Per M.P.E.P. § 2145, the arguments of counsel cannot take the place of evidence in the record. *In re Schulze*, 346 F.2d 600, 602, 145 USPQ 716, 718 (CCPA 1965); *In re Geiseler*, 116 F.3d 1465, 43 USPQ2d 1362 (Fed. Cir. 1997).

With respect to Toguchi et al., applicant argues claim 1 expressly requires copper. The examiner respectfully disagrees. Although the claim uses the phrase "contains copper atoms", the amount disclosed includes an amount of zero. Applicant discusses Table 1 in the specification and alleges unexpected results. The examiner respectfully submits these results are insufficient to establish unexpected results over either Higashi or Toguchi. Applicant has not compared the devices having some minor amounts of copper impurities with a device having no copper impurities. One of ordinary skill in the art would expect compounds having limited impurities to operate better than compounds having a great degree of impurity. Accordingly, applicant's results are considered to be expected rather than unexpected. It is obvious to one of ordinary skill in the art to use a compound in a pure form as one would expect a more pure form of the compound to perform better than an impure form of the compound. Furthermore, it is obvious to purify a known compound (see MPEP 2144.04).

The following is further noted:

Where a claimed improvement on a device or apparatus is no more than "the simple substitution of one known element for another or the mere application of a known technique to a piece of prior art ready for improvement," the claim is unpatentable under 35 U.S.C. 103(a). *Ex Parte Smith*, 83 USPQ.2d 1509, 1518-19 (BPAI, 2007) (citing *KSR v. Teleflex*, 127 S.Ct. 1727, 1740, 82 USPQ2d 1385, 1396 (2007)). Accordingly, applicant claims a combination that only unites old elements with no change in the respective functions of those old elements, and the combination of those elements yields predictable results; absent evidence that the modifications necessary to effect the combination of elements is uniquely challenging or difficult for one of ordinary skill in the art, the claim is unpatentable as obvious under 35 U.S.C. 103(a). *Ex Parte Smith*, 83 USPQ.2d at 1518-19 (BPAI, 2007) (citing *KSR*, 127 S.Ct. at 1740, 82 USPQ2d at 1396). Accordingly, since applicant has submitted no persuasive evidence that the combination of the above elements is uniquely challenging or difficult for one of ordinary skill in the art, the claim is unpatentable as obvious under 35 U.S.C. 103(a) because it is no more than the predictable use of prior art elements according to their established functions resulting in the simple substitution of one known element for another or the mere application of a known technique to a piece of prior art ready for improvement.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dawn Garrett whose telephone number is (571) 272-1523. The examiner can normally be reached on Monday through Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Milton Cano can be reached on (571) 272-1398. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Dawn Garrett/

Dawn Garrett
Primary Examiner
Art Unit 1794